

SCT054698-52

PATENT OFFICE OF THE PEOPLE'S REPUBLIC OF CHINA

Address : Receiving Section of the Chinese Patent Office, No. 6 Tucheng Road West, Haidian District, Beijing. Postal code: 100088

Zip Code: 100020 China Sinda Intellectual Property Ltd. China Garment Mansion No. 99 Jianguo Road, Chaoyang District, Beijing 100020, China. Weimin FAN Guoqing GUO	Examiner:	
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Application No:	200480015062.4	Date of Issuing: June 29, 2007
Applicant:	LG CHEM, LTD	
Title of Invention:	RECHARGEABLE LITHIUM BATTERY USING SEPARATOR PARTIALLY COATED WITH GEL POLYMER	

NOTIFICATION OF THE FIRST OFFICE ACTION

(for Entry of an International Patent Application into the National Phase)

- ☒ Applicant made the request for substantive examination in accordance with the provisions of Paragraph 1 of Article 35 of the Patent Law. The Examiner has proceeded with the examination as to substance of the above-identified patent application for invention.
☐ In accordance with the provisions of Paragraph 2 of Article 35 of the Patent Law, the Patent Office has, on its own initiative, decided to proceed with the examination as to substance of the same.
- ☒ Applicant claims
May 30, 2003, when the previous application was filed with KR, as a priority date;
 _____, when the previous application was filed with _____, as a priority date.
- ☐ The amendment submitted on _____ has been rejected under Rule 51 of the Implementing Regulations of the Patent Law.
☐ For the reasons indicated in the text of this Action, the following documents submitted have been rejected under Article 33 of the Patent Law:
 - ☐ The Chinese translation of the annex to the international preliminary examination report.
 - ☐ The Chinese translation of the amendments under Article 19 of PCT.
 - ☐ The amendments under Article 28 or 41 of PCT.
- ☒ The application has been examined on the basis of the translation of the originally filed international application;
☐ The application has been examined on the basis of the following documents:
 - ☐ Description, pages _____, as in the translation of the originally filed international application;
 pages _____, as in the translation of the annex to IPER;
 pages _____, as in the amendments under Article 28 or 41 of PCT;
 pages _____, as in the amendments under Rule 51 of the Implementing Regulations.
 - ☐ Claims, No. _____, as in the translation of the originally filed international application;
 No. _____, as in the translation of the amendments under Article 19 of PCT;
 No. _____, as in the translation of the annex to IPER;
 No. _____, as in the amendments under Article 28 or 41 of PCT;
 No. _____, as in the amendments under Rule 51 of the Implementing Regulations.
 - ☐ Drawings, sheets _____, as in the translation of the originally filed international application;
 sheets _____, as in the translation of the annex to IPER;
 sheets _____, as in the amendments under Article 28 or 41 of PCT.
 sheets _____, as in the amendments under Rule 51 of the Implementing Regulations.

☒ The following references are cited in the notification. The codes of the references will be used in further examination procedures:

Code	Reference No. or Title	Publication Date (or Filing Date of a Conflicting Application)
1	CN1259773A	2000-7-12
2		

5. Conclusive opinion:

☐ regarding the Description

- ☐ Its content belongs to the scope of Article 5 of the Patent Law which cannot be granted.
- ☐ It is not in conformity with the provisions of Paragraph 3 of Article 26 of the Patent Law.
- ☐ It is not in conformity with the provisions of Article 33 of the Patent Law.
- ☐ The presentation manner of the Description is not in conformity with Rule 18 of the Implementing Regulations of the China Patent Law.

☒ Regarding the Claims:

- ☐ Claims _____ do not possess novelty under Paragraph 2 of Article 22 of the Patent Law.
- ☒ Claims 1-6 do not possess inventiveness under Paragraph 3 of Article 22 of the Patent Law.
- ☐ Claims _____ do not possess practical applicability under Paragraph 4 of Article 22 of the Patent Law.
- ☐ Claims _____ fall in the scope of Article 25 of the Patent Law which cannot be granted.
- ☐ Claims _____ do not meet the requirements of Paragraph 4 of Article 26 of the Patent Law.
- ☐ Claims _____ do not meet the requirements of Paragraph 1 of Article 31 of the Patent Law.
- ☐ Claims _____ do not meet the requirements of Article 33 of the Patent Law.
- ☐ Claims _____ do not meet the requirements of Paragraph 1 of Rule 13 of the Implementing Regulations.
- ☐ Claims _____ do not meet the requirements of Paragraph 1 of Rule 2 of the Implementing Regulations.
- ☐ Claims _____ do not meet the requirements of Rules 20 of the Implementing Regulations.
- ☐ Claims _____ do not meet the requirements of Rules 21 of the Implementing Regulations.
- ☐ Claims _____ do not meet the requirements of Rules 22 of the Implementing Regulations.
- ☐ Claims _____ do not meet the requirements of Rules 23 of the Implementing Regulations.

Please refer to the text of the Action in detail for the above.

6. Based on the above conclusive opinion, the Examiner points out that

- ☐ The applicant should amend the application documents according to the requirements of the text of the Action.
- ☐ The applicant should state the reason that the application may be granted a patent right in the observation and amend the application documents according to the teaching of the text of the Action, otherwise the application may not be granted.
- ☒ No substantive contents to be granted are presented in the application. If applicant does not submit his observation or the observation is not reasonable, the application will be rejected.
- ☐

7. The following items shall come to applicant's attention:

- (1) According to Article 37 of the Patent Law, applicant should submit his observation within 4 months from the date he receives the notification. If, without any justified reasons, the time limit for making a response is not met, the application will be deemed to have been withdrawn.
- (2) The amendments to the application documents should meet the requirements of Article 33 of the Patent Law. The amended documents should be submitted in two copies and the amending manner should comply with the relevant regulations of the Examination Guide.
- (3) The observation and / or amended documents should be mailed to or submitted directly to the Receiving Section of the Patent Office, and no other submissions have legal effects.
- (4) Applicant and / or attorney may not have a meeting with the Examiner unless an appointment has been made in advance.

8. The text of this Action consists of 3 page(s), including the following annexes:

- ☒ the cited references 14 pages, 1 copies.
- ☐

Text of The First Office Action (English Version)

Upon examination, the following comments are hereby given.

1. Claim 1 is rejected under Article 22 (3) of the Chinese Patent Law as lacking an inventive step.

Claim 1 relates to a separator for a battery, which is coated with a gel polymer over 40-60% of a total separator area. Reference D1 (CN1259773A) discloses a composite polymer electrolyte film for a lithium battery, said composite polymer electrolyte film has a multilayer structure and consists of two outer films and a middle film which is a microporous film having better thermal stability and mechanical property and is coated on both sides with a microporous or non-porous polymer film having viscosity; the outer films are mainly for compatibility with viscosity of the electrode; the middle film is polypropylene (PP) microporous film or polyethylene (PE) microporous film. The outer films are coated on the middle film by a method comprising the steps: dissolving a mixture of polyvinylidene fluoride (PVdF) or vinylidene fluoride with PAN in an acetone solvent, adding the mixture to inorganic powder such as SiO_2 and stirring completely, storing the resultant mixture in atmosphere at a temperature between 40 and 60 °C statically till that the mixture becomes a gel eventually, and coating the gel on the middle film. The middle film disclosed in D1 is the separator and the outer films are the gel polymer coated on the separator defined in claim 1 of the present invention.

It can be seen that D1 has disclosed most of the technical features defined in claim 1. The difference between claim 1 and D1 is that claim 1 clearly defines that over 40-60% of a total separator area is coated with a gel polymer, but D1 does not disclosed the specific area proportion of the inner film coated with a gel polymer. The technical problem claim 1 actually resolves, in relative to D1, is the low electrolyte impregnation rate and the nonuniform distribution caused by coating the separator with a gel polymer.

However, to increase the impregnation rate of the electrolyte in the separator and make the electrolyte distribute uniformly by coating only a partial surface of the separator with a polymer and exposing the non-coated part is known to a person skilled in the art according to the property of the gel polymer and the impregnation property of the electrolyte to the separator. Therefore, it is obvious to a person skilled in the art to coat only a partial surface of the separator with a gel polymer to resolve the above technical problem. And a person skilled in the art can determine the range of the coating proportion of the gel polymer through limited number of simple tests. For example, a preferred range can be determined by a graph of battery property as a function of the coating proportion, which does not need inventive skills. Consequently, the technical solution set forth in claim 1 does not possess prominent substantive features and represents no notable progress under Article 22 (3) of the Chinese Patent Law.

2. Claim 2 is rejected under Article 22 (3) of the Chinese Patent Law as lacking an inventive step. Specifically,

Claim 2 further defines claim 1 with the additional technical feature "wherein the gel polymer is coated on the separator by a gravure coating method". However, a gravure coating method is a commonly used coating method in the field and it is obvious to a person skilled in the art to coat with a

gel polymer. Consequently, as claim 1 lacks an inventive step, claim 2 does not meet the requirements for inventiveness either.

3. Claim 3 is rejected under Article 22 (3) of the Chinese Patent Law as lacking an inventive step. Specifically,

Claim 3 further defines claim 1 with the additional technical feature "wherein the separator has a gel polymer-coated part and a non-coated part patterned in a regular shape". However, it is a conventional technical solution to have a coated-part and a non-coated part patterned in a regular shape on a material to be coated, so it is obvious to a person skilled in the art to have a gel polymer-coated part and a non-coated part patterned in a regular shape when the separator is partially coated. Consequently, as claim 1 lacks an inventive step, claim 3 does not meet the requirements for inventiveness either.

4. Claim 4 is rejected under Article 22 (3) of the Chinese Patent Law as lacking an inventive step. Specifically,

Claim 4 further defines claim 1 in the type of the gel polymer, wherein the polyvinylidene fluoride (PVDF) is disclosed in D1. Consequently, as claim 1 lacks an inventive step, the technical solution that the gel polymer is PVDF defined in claim 4 does not meet the requirements for inventiveness either.

Other gel polymers defined in claim 4 are materials commonly used by a person skilled in the art for preparing a separator. Consequently, as claim 1 lacks an inventive step, the technical solution that the gel polymer is other material defined in claim 4 does not meet the requirements for inventiveness either.

5. Claim 5 is rejected under Article 22 (3) of the Chinese Patent Law as

lacking an inventive step. Specifically,

Claim 5 defines an electrode assembly for a rechargeable lithium battery, which comprises a positive electrode, a negative electrode, and a separator as defined in any one of claims 1 to 4.

D1 discloses a lithium battery using a composite polymer film (the rechargeable lithium battery as defined in claim 5), which battery comprises an electrode assembly consisting of a positive electrode, a negative electrode, and a separator (see page 4, the last 9 lines of the Description and example 1). The difference between claim 5 and D1 is the use of the separator as defined in any one of claims 1 to 4. However, the separator does not possess an inventive step over D1 (see the comments to claims 1-4). Consequently, claim 5 lacks an inventive step either.

6. Claim 6 is rejected under Article 22 (3) of the Chinese Patent Law as lacking an inventive step. Specifically,

Claim 6 defines a rechargeable lithium battery comprising an electrode assembly as defined in claim 5, a positive terminal, a negative terminal and an aluminum-laminated film.

D1 discloses a lithium battery using a composite polymer film (the rechargeable lithium battery), which battery uses an aluminum-plastic composite packaging film (the aluminum-laminated film defined in claim 6) as a shell comprising an electrode assembly consisting of a positive electrode, a negative electrode, and a separator (see page 4, the last 9 lines of the Description and example 1); and it is obvious that the battery comprises a positive terminal and a negative terminal. It can be seen that claim 6 differs from D1 in the use of the electrolyte assembly as defined in claim 5. However,

the electrolyte assembly defined in claim 5 does not possess an inventive step over D1 (see the comments on claim 5). Consequently, claim 6 lacks an inventive step either.


For the reasons mentioned above, neither independent nor dependent claims in the present application meet the requirements for inventiveness. Further, the Description does not record any substantive features that are patentable. Therefore, the present application may not expect a patent right even if the applicant reorganizes and/or further defines the claims according to the contents of the Description. The present application shall be rejected if the applicant cannot provide convincing reasons proving the novelty and inventiveness of the present application within the specified time limit.

The applicant should indicate the basis of the amendment, if made, in the original application documents and reasons that the amendment does not go beyond the initial disclosures filed originally. The applicant should also submit a marked-up version of the amendment on which the amendment is marked with color and to ensure that the content on the marked-up version and the replacement sheet of the amendment is consistent with each other.



中华人民共和国国家知识产权局

R46P8-12

100032 北京市西城区金融街 19 号富凯大厦 B 座 11 层 中原信达知识产权代理有限责任公司 樊卫民,郭国清	发文日 绝 限 2007-11-14
申请号: 2004800150624 	
申请人: 株式会社 LG 化学	
发明名称: 使用被胶凝聚合物部分涂布的隔膜的可充电锂电池	



第一次审查意见通知书

(进入国家阶段的 PCT 申请)

- ☒ 应申请人提出的实审请求, 根据专利法第 35 条第 1 款的规定, 国家知识产权局对上述发明专利申请进行实质审查。
☐ 根据专利法第 35 条第 2 款的规定, 国家知识产权局专利局决定自行对上述发明专利申请进行审查。
- ☒ 申请人要求以其在:
KR 专利局的申请日 2003 年 05 月 30 日为优先权日,
专利局的申请日 年 月 日为优先权日,
专利局的申请日 年 月 日为优先权日。
- ☐ 申请人于 年 月 日和 年 月 日以及 年 月 日提交了修改文件。
经审查, 申请人于 年 月 日提交的 不符合专利法实施细则第 51 条第 1 款的规定。
☐
- ☒ 审查是针对原始提交的国际申请的中文译文进行的。
☐ 审查是针对下述申请文件进行的:
☐ 说明书 第 页, 按照进入中国国家阶段时提交的国际申请文件的中文文本;
第 页, 按照专利性国际初步报告附件的中文文本;
第 页, 按照依据专利合作条约第 28 条或 41 条规定所提交的修改文件;
第 页, 按照依据专利法实施细则第 51 条第 1 款规定所提交的修改文件;
第 页, 按照 年 月 日所提交的修改文件。
☐
☐ 权利要求 第 项, 按照进入中国国家阶段时提交的国际申请文件的中文文本;
第 项, 按照依据专利合作条约第 19 条规定所提交的修改文件的中文文本;
第 项, 按照专利性国际初步报告附件的中文文本;
第 项, 按照依据专利合作条约第 28 条或 41 条规定所提交的修改文件;
第 项, 按照依据专利法实施细则第 51 条第 1 款规定所提交的修改文件;
第 项, 按照 年 月 日所提交的修改文件。
☐
☐ 附图 第 页, 按照进入中国国家阶段时提交的国际申请文件的中文文本;
第 页, 按照专利性国际初步报告附件的中文文本;
第 页, 按照依据专利合作条约第 28 条或 41 条规定所提交的修改文件;
第 页, 按照依据专利法实施细则第 51 条第 1 款规定所提交的修改文件;
第 页, 按照 年 月 日所提交的修改文件。





☒ 本通知书引用下述对比文件(其编号在今后的审查过程中继续沿用):

编号	文件号或名称	公开日期 (或抵触申请的申请日)
1	CN1259773A	2000-7-12

5. 审查的结论性意见:

☐ 关于说明书:

- ☐ 申请的内容属于专利法第 5 条规定的不授予专利权的范围。
- ☐ 说明书不符合专利法第 26 条第 3 款的规定。
- ☐ 说明书不符合专利法第 33 条的规定。
- ☐ 说明书的撰写不符合专利法实施细则第 18 条的规定。

☒ 关于权利要求书:

- ☐ 权利要求 不具专利法第 22 条第 2 款规定的新颖性。
- ☒ 权利要求 1-6 不具专利法第 22 条第 3 款规定的创造性。
- ☐ 权利要求 不具专利法第 22 条第 4 款规定的实用性。
- ☐ 权利要求 属于专利法第 25 条规定的不授予专利权的范围。
- ☐ 权利要求 不符合专利法第 26 条第 4 款的规定。
- ☐ 权利要求 不符合专利法第 31 条第 1 款的规定。
- ☐ 权利要求 不符合专利法第 33 条的规定。
- ☐ 权利要求 不符合专利法实施细则第 2 条第 1 款的规定。
- ☐ 权利要求 不符合专利法实施细则第 13 条第 1 款的规定。
- ☐ 权利要求 不符合专利法实施细则第 20 条的规定。
- ☐ 权利要求 不符合专利法实施细则第 21 条的规定。
- ☐ 权利要求 不符合专利法实施细则第 22 条的规定。
- ☐ 权利要求 不符合专利法实施细则第 23 条的规定。

☐ 分案的申请不符合专利法实施细则第 43 条第 1 款的规定。

上述结论性意见的具体分析见本通知书的正文部分。

6. 基于上述结论性意见, 审查员认为:

- ☐ 申请人应按照通知书正文部分提出的要求, 对申请文件进行修改。
- ☐ 申请人应在意见陈述书中论述其专利申请可以被授予专利权的理由, 并对通知书正文部分中指出的不符合规定之处进行修改, 否则将不能授予专利权。
- ☒ 专利申请中没有可以被授予专利权的实质性内容, 如果申请人没有陈述理由或者陈述理由不充分, 其申请将被驳回。

7. 申请人应注意下述事项:

- (1) 根据专利法第 37 条的规定, 申请人应在收到本通知书之日起的肆个月内陈述意见, 如果申请人无正当理由逾期不答复, 其申请将被视为撤回。
- (2) 申请人对其申请的修改应符合专利法第 33 条的规定, 修改文本应一式两份, 其格式应符合审查指南的有关规定。
- (3) 申请人的意见陈述书和 / 或修改文本应邮寄或递交国家知识产权局专利局受理处, 凡未邮寄或递交给受理处的文件不具备法律效力。
- (4) 未经预约, 申请人和 / 或代理人不得前来国家知识产权局专利局与审查员举行会晤。

8. 本通知书正文部分共有 3 页, 并附有下列附件:

☒ 引用的对比文件的复印件共 1 份 14 页。



审查员: 高天柱(9636)

2007 年 6 月 14 日

审查部门

审查协作中心

21302
2006. 7



回函请寄: 100088 北京市海淀区前门桥西土城路 6 号 国家知识产权局专利局受理处收
(注: 凡寄给审查员个人的信函不具有法律效力)

第一次审查意见通知书正文

申请号：2004800150624

经审查，现提出如下审查意见：

1、权利要求1不符合专利法第22条第3款的规定。

权利要求1请求保护一种电池用隔膜，其在总隔膜面积的40~60%上被胶凝聚合物涂布。

对比文件1（CN1259773A）公开了一种用于锂电池中的复合聚合物电解质膜，该复合聚合物电解质膜是一种多层结构的复合膜，由两外层膜及中间膜组成，中间膜为一种具有较高热稳定性和力学性能的微孔膜，在中间膜的两侧涂覆有具有粘结性的微孔或者无孔聚合物薄膜。外层膜主要起到与电极粘性相容的作用。中间膜可以为聚丙烯微孔薄膜（PP）或者聚乙烯微孔薄膜（PE）。外层膜采用如下方法涂覆在中间膜上，将聚偏氟乙烯（PVdF）、或偏氟乙烯与PAN的混合物，溶于丙酮溶剂中，然后加入SiO₂等无机粉末中，充分混匀，让该混合物静止存放在40-60摄氏度的大气中，直到混合物逐渐变为凝胶体，将该凝胶体涂敷在中间膜上。对比文件1所说的中间膜就是本申请权利要求1所说的隔膜，而对比文件1所说的外层膜即为涂覆在隔膜上的胶凝聚合物。

可见，权利要求1的大部分技术特征已经被对比文件1公开，权利要求1与对比文件1的区别在于：权利要求1明确限定在隔膜总面积的40-60%上涂布胶凝聚合物，而对比文件1并没有具体限定在内侧膜上涂覆胶凝聚合物的面积比例。相对于对比文件1，权利要求1实际解决的技术问题是，隔膜由于涂覆了凝胶聚合物而引起的电解质浸渍率低、分布不均匀的问题。

但是，只在隔膜的部分表面上涂覆聚合物，露出部分未涂覆区域，这样可以增加电解液在隔膜中的浸渍率，并使电解液分布均匀，这是本领域技术人员根据胶凝聚合物的性质、电解液对隔膜的浸渍性质很自然就能知道的。因此，本领域技术人员为了解决上述实际解决的技术问题，想到只在隔膜部分表面上涂覆胶凝聚合物是显而易见的。至于胶凝聚合物的涂布比例范围，本领域技术人员只需要进行有限次的简单试验就可以确定，比如做一个涂布比例与电池性能的关系图即可以确定优选的范围，这并不需要付出创造性的劳动。因此，权利要求1没有突出的实质性特点和显著的进步，不具备创造性。

2、权利要求2不符合专利法第22条第3款的规定。

权利要求2引用了权利要求1，其附加技术特征为：“其中通过凹版涂布法将胶凝聚合物涂布在隔膜上”。

凹版涂布法是本领域技术人员经常采用的涂布方法，本领域技术人员想到采用该

方法涂布胶凝聚合物是显而易见的。因此，当权利要求1不具备创造性时，权利要求2也不具备创造性。

3、权利要求3不符合专利法第22条第3款的规定。

权利要求3引用了权利要求1，其附加技术特征为：“其中隔膜具有以规则形状图案化的胶凝聚合物涂布部和未涂布部”。

在待涂布材料上形成有规则形状的涂布区域和未涂布区域的图案，是领域技术人员通常采用的技术手段，因此当需要对隔膜进行部分涂布时，本领域技术人员想到在隔膜上形成具有以规则形状图案化的胶凝聚合物涂布部和未涂布部是显而易见的。因此，当权利要求1不具备创造性时，权利要求3也不具备创造性。

4、权利要求4不符合专利法第22条第3款的规定。

权利要求4引用了权利要求1，其附加技术特征对胶凝聚合物的种类做了进一步的限定。但是，其中聚偏1,1-二氟乙烯（PVDF）已经被对比文件1公开。因此，当权利要求1不具备创造性时，权利要求4中胶凝聚合物为PVDF的方案也不具备创造性。

而权利要求4中限定的其他胶凝聚合物也都是本领域技术人员在制备隔膜时经常采用的材料，因此当权利要求1不具备创造性时，权利要求4中采用其他胶凝聚合物的技术方案也不具备创造性。

5、权利要求5不符合专利法第22条第3款的规定。

权利要求5请求保护一种可充电锂电池用电极组，其包括正极、负极、和权利要求1至4中任一项的隔膜。

对比文件1公开了一种使用了复合聚合物膜的锂离子电池（即权利要求5所说的可充电锂电池），其中包括由正极、负极和隔膜组成的电极组（参见对比文件1说明书第4页倒数第9行至倒数第1行，实施例1）。权利要求5与对比文件1的区别在于权利要求5采用了权利要求1—4所述的隔膜，但是，权利要求1—4请求保护的隔膜相对于对比文件1没有创造性（参见对权利要求1—4的评述），因此权利要求5也不具备创造性。

6、权利要求6不符合专利法第22条第3款的规定。

权利要求6请求保护一种可充电锂电池，包括权利要求5的电极组、正极端子、负极端子、和铝层压膜。

对比文件1公开了一种使用了复合聚合物膜的锂离子电池（即可充电锂电池），该电池使用了铝塑复合包装膜（即权利要求6所说的铝层压膜）作为外壳，在外壳内具有正极、负极以及隔膜构成的电池组（参见对比文件1说明书第4页倒数第9行至倒

数第1行，实施例1），而该电池必然存在正极端子和负极端子。可见，权利要求6与对比文件1的区别只在于权利要求6采用了权利要求5所述的电极组。但是，权利要求5请求保护的电极组相对于对比文件1没有创造性（参见对权利要求5的评述），因此，权利要求6也不具备创造性。

基于上述理由，本申请的独立权利要求以及从属权利要求都不具备创造性，同时说明书中也没有记载其他任何可以授予专利权的实质性内容，因而即使申请人对权利要求进行重新组合和 / 或根据说明书记载的内容作进一步的限定，本申请也不具备被授予专利权的前景。

申请人如果要修改申请文件应注意：对于权利要求书和说明书的修改，申请人应在意见陈述书中指明所作修改在原申请文件中的依据，以及修改不超范围的理由。

同时应提交修改对照页，对所作修改做出清楚的标注，并保证对照页与替换页修改内容的一致性。

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